MDARC CARRIER
Volume XLV Number 3 WWW.MDARC.ORG March 1998

March Meeting

Friday, March 20
7:00 PM

Auction
***

Our Savior's Lutheran Church
1035 Carol Lane
Lafayette, CA

The first club auction of the year will be held on Friday, March 20th. The doors open for setup at 6:00 pm. The auction starts at 7:00, an hour earlier than the usual meeting time, and ends promptly at 10:00. There will be no VE exams this month.

Inside

It was a Hot, Dusty Day 2
Repeaters, Service, Loyalty! 3
1997 Final Actuals 3
MDARC General Meeting 4
MDARC Board Minutes 5
Power to the People! Part I 6
Public Service Events 1998 8
Diablo Antenna Threatened 8
W6CX Signal Strength Form .. 9

Presidential QRM

By Sam Lipson, KO6JR

March is upon us and with March comes our Auction. As I have mentioned in previous QRM pieces, the auction is a great time to pick up that item which you need for the shack. It is also a great time to clean out the shack. It even benefits the club more if you donate the item to the Club and then the Club gets credit for the full sale price. See you all at the auction with your checkbooks.

I would like to thank all of you who were responders or on standby on the night of 5 February when Contra Costa County activated RACES. Your support of our community really makes a difference. I also want to thank John, KF6MNL, for taking on the attendance prizes at the meetings as well as Jeff, KF6EUM, for taking on public service for this year. As you may have heard at the February meeting, the trail rides are already scheduled and we have been asked to participate again. Thanks to both of these men and to the rest of us who will volunteer for these public service events.

Loose Ends — Look for the Club Roster late in March. Remember, Board meetings are on Monday, the week before (not the week of) the Club meeting. Everyone is invited. The location is announced at the General Meeting and on the Net.

Let's all hope that we are through all of the heavy rain and can enjoy a milder spring. I look forward to hearing you on the airwaves and seeing you at the auction.

73, Sam

From the Repeater Committee

By Jim Brunk, Chairman

Signal Strength

The committee would like to thank JC, K0HPS and Denis, KF6FGB for signal reports last month. The report form was printed in the February *Carrier*. It is also found on the Design Link BBS in the repeater section and is on the MDARC web page at the specific address of http://www.mdarc.org/rrrcs1.html. If you encounter signal strength of less than S9 or have any other comments, send in a report.

These surveys allow us to find out where the poor locations exist. With this feedback, we can plan for future system enhancements. Help us out.

New 220 Repeater

After several years talking about replacing the 220 machine, this year it will be. At their February meeting, the board approved a spending plan to replace it. The committee has begun to lay the groundwork to procure a suitable replacement and will install it within the next several months. This should make this system more reliable.

Once again: If you have ideas on how we can make our system of repeaters and packet nodes the best in the area, let us know. We want the MDARC systems to be known as the best in the west!

Control Code Change Coming

Soon, the control codes for the repeaters will change. Those people who have paid the repeater support fees will receive a letter with the new codes and autopatch procedures. These features are available to those who pay for the support of the repeater. If you find yourself interested in these additional repeater options, you should contact Pete Smith, W6NZY, and (510) 680-7106 to gain these privileges.

continued on page 3

Mt. Diablo Amateur Radio Club W6CX

P.O. Box 23222
Pleasant Hill, CA 94523
(510) 932-6125

The Carrier is a monthly publication of the Mount Diablo Amateur Radio Club (MDARC). It is the policy of the editor to publish all material submitted by the membership provided such material is in good taste, relevant to amateur radio and of interest to MDARC members, and space is available.

All material must be submitted to the editor by the first of day of the month of publication. Material is accepted on a first-in, first-out basis. Articles and other material may be submitted via Internet email to w6uv@dnai.com (preferred), or delivered to the editor at the address listed below. Material will be accepted in plain ASCII, Word for Windows, or WordPerfect format. Material may also be submitted as hardcopy.

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Public Service	
Jeff Hart, KF6EUM	(510) 798-9281
Carrier Editor	
Jerry Gardner, W6UV	(510) 735-7325
2236 Tahiti Drive	w6uv@dnai.com
San Ramon, CA 94583	
Rocky Ridge Repeater Committee	
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It was a Hot, Dusty Day . . .

By Mike Patterson, KE6JGA

My partner and I had just stepped off the midway's steaming pavement onto the dead grass of the carny area when we saw a teenaged boy waving to us. His other hand enclosed the small hand of a frightened little girl. We swung into action.

Thanking the teenager for bringing her to us, we knelt down to the girl and began the interrogation.

"Hi. My name is Mike. This is Lou", pointing to my partner. "What's your name?"

With tear-stained cheeks, she was finally able to stutter out "V-V-Veronica".

"What's your last name, Veronica?" No answer, except for some stifled sobs.

"How old are you?" After a moment, she held up six fingers.

My partner called it in. "Command, this is Team 2. We have a six-year-old female. Long black hair, black eyes, wearing a white T-shirt with blue stripes, pink shorts and sneakers. Her name is Veronica. She's too upset to give her last name."

"Understood, Team 2. Take a look around for her parents. If you don't find them, bring her into the command center."

"Affirmative, Command".

"Veronica, let's see if we can find your mom or dad. Where were they when you saw them last?" Hesitatingly, she pointed in the direction of one of the rides. "OK, let's start there. Would you like to hold my hand?" She nodded and took my hand as we headed in the direction she pointed.

After a few moments walking around the rides, Veronica suddenly pointed and said, "There she is!" She ran to her mother. Another mission accomplished for the Sheriff's Amateur Radio Communications Team.

The Sheriff's ARC Team performs a number of important functions for the Sheriff's Office and the people of Contra Costa County. Only one of them is finding lost parents and children at the County Fair in Antioch. From the Team's manual, "The primary function of this unit is to provide supplemental communications and other services, as requested, for the Contra Costa County Sheriff's Office in pursuit of its mission of serving the public."

Our Team performs no law enforcement functions, but what we do supplements the work of the deputies and often frees them to concentrate on more serious matters. We work at events like the county fair, parades, races, Safe Boating Day, and the Lafayette Concours car show.

We provide extra "eyes and ears" for the deputies and assist with traffic and crowd control. Just our uniformed presence may help inhibit, shall we say, "anti-social activities". Some of our members support the Sheriff's dispatch center and assist with communications-related administrative and community services. And, of course, we are available to supplement the Search And Rescue team's communications as needed. In fact, our small Team contributes over 1,200 hours per year to the people of Contra Costa County.

A new service we have begun providing on request is one that can't be provided by any other team of the Sheriff's Reserves: ATV. Our first ATV event was the county fair last August. Locating a camera in a strategic area of the fair grounds gave the Sheriff's dispatchers and commanders unprecedented views of potential trouble areas. The service was exceptionally popular with everyone that saw it. As a result, we were requested to provide the service for the Lafayette Concours classic car show, and expect many other requests in the future.

We are also considering other ways we might use other ham technologies, such as APRS.

We are always looking for a few good people to join the Team. To be a member, you must maintain active membership in Contra Costa County RACES, have a valid FCC amateur radio license of technician class or higher, be at least 18 years old, have a valid California driver's license, pass a background check and be willing to actively participate in ARC Team functions.

The Team meets monthly at the Sheriff's Field Operations Building, 1980

continued on page 8

Repeaters, Service, Loyalty, Commitment!

By Larry Gansz, KB2GV

I've been following the evolution of the club the past several months from four land. I'm glad to see some items discussed and presented over the past few years beginning to surface and take shape, moving the club and service forward.

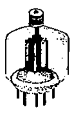
It's certainly a relief to many as the repeaters return to full operational capability with better antenna locations, multiple telephone line capability, expansion, and equipment updating on the horizon. I've said before I think we, the club, can not afford not to be on the hill. With this we must provide the best possible multiband repeater system we can, dedicated to serving all in the area.

During 1996 the board recommended, and membership approved, providing money to the RRRG Committee to fund rebuilding the repeater antenna system for the new tower. With approval of the money and supported by the membership came a requirement and a commitment from me, the board, and the committee to survey repeater coverage so we could develop a plan to provide the best possible service. A basic requirement was following return of the antennas to the tower we would conduct instrumented field strength surveys to identify "holes" in repeater coverage. This would allow us to publish repeater coverage and develop a plan to improve service. A project plan on conducting the surveys was supposed to be in place prior to antenna installation so coverage information could be provided to users as soon as possible after antenna placement on the new tower. As a start, more than one person in the club has access to a computer program to provide predicted coverage based on location, power, antenna height and gain.

I now see a "survey" to ask members to provide reports on coverage problems. Wow, how many have we got, four or five mentioned in the *Carrier*? Maybe this is good, maybe we don't have many problems, do we know? What about non members? (Why ask about non members? .... Where do new members come from?) What about the people who can't use the machine and just go elsewhere? What about the people that continued to support the club, believing our commitment to improve service, now they see a shiny new tower, more dollars spent, higher dues, and still a sub par performance? Some wonder where they went or why they left. Are they going to fill out a piece of paper? Yes, probably a check in 1998 to a different club! We owe it to the people, our members, our community, and to ourselves to fulfill the commitments we made to the best of our ability! I didn't generate the requirement because I'm an engineer or knew how to do or could do the survey. I made it because it was the "right" thing to do. So, maybe the ATV link waits, maybe the new 220 machine waits, they stay in the plan but let's keep our priorities and commitments in line. Yes, the fluff and bigger is better sure is impressive on the surface, like some books and politicians. However, as many of you may remember my lectures and class teachings, when cutting through such things or if you're in doubt, "return to the basics". Here is the basic, "can I key the machine when and where I need it?"

I know a long time ago I said I'd keep it short, so just divide this by the number of months since you last heard me.

73, Larry R Gansz, KB2GV



1997 Final Actuals

by Greg Estep, KE6VTA

Income	
Auction	2835
Interest	536
Membership Dues	7636
PACIFICON	9014
Rocky Ridge Repeater Transfer	2926
Total Income	22947
Expense	
Carrier	5843
Field Day	229
Holiday Party	1521
Insurance	795
Membership	1316
Miscellaneous	455
Picnic	821
Rent/Coffee	825
Schools/Libraries	799
Telephone	120
Trailer	250
Total Expense	12974
Net Income	9973

Comments on 1997 actuals.

PACIFICON 1997 transferred $10,000 to MDARC. During 1997 $591 of PACIFICON 1996 expenses was paid and $395 was paid of PACIFICON 1997 expenses after the PACIFICON 1997 books were closed.

The *Carrier* expenses were budgeted at $7500. Due to many peoples effort the expenses were trimmed and the actuals were $5843. This was a significant savings for the club. Thanks to all that help reducing our expense in this area.

The Rocky Ridge Repeater Transfer reflects what remained of the Repeater Groups funds after the 1997 bills were paid. MDARC does not carry funds forward from year to year as the Repeater Group did so this category is not reflected in the 1998 budget.

Overall, income for 1997 ran $2146 over what was budgeted and expense ran $3557 under budget.

From the Repeater Committee

continued from page 1

Laminator

The committee has purchased a laminator so we can make our own repeater information cards. We are making the laminator available during normal club meetings to the membership. For one dollar we will laminate items. We have several sizes of pouches from letter size (8.75 x 11.25 inches), medium card (2.5 x 3.625 inches), id badge with clip (2.25 by 3.625inches) and business card (2 x 3.5 inches). In addition, we have made available yellow emergency communications / public service communications signs for a dollar apiece too. We hope the membership will take advantage of the use of this machine to laminate their licenses and other important documents.

MDARC General Meeting

Feb. 20, 1998

The meeting was called to order by President Sam Lipson, KO6JR, at 8:04 p.m. Upgrades and new members introduced themselves. Upgrades to general were: Don, KF6HGO and Ruff, K6DME. New members were: Dave Flashman, KF6PFY and Marie Lewis, KF6GLV.

The January minutes were **approved**.

Sam presented Sylvia White, KC6YJV, with the W6CX award for her work with Pacificon.

Jim Brunk, N6BHX reported on RRRG progress on the various repeaters.

Greg Estep, KE6VTA, reported on Pacificon (Oct. 16-18) plans. Dick Tomsik, KJ6YE questioned the ticket prices. After a discussion with Greg and Dick Brown, KT6X, the members **approved** an increase in ticket prices.

Greg reported the balance in the treasury, and announced the next MDARC Board meeting on Mar. 9 at Emil Villa's.

Sam announced new radio license classes beginning Mar. 17, 7 to 9 p.m. at the Pleasant Hill Adult Education School. Also, he announced the results of earlier evening VE tests were six candidates and three successful upgrades. Sam mentioned receipt of a letter from Frank Bianchi, KE6EUA, Principal of Ohlone School, thanking the club for the donation of books. The school has incorporated amateur radio in the curriculum. Frank sent along some pictures of their station and tower.

Mike Patterson, KE6JGA, reported that he was stepping down from the role of Public Service Coordinator because of time pressures. His replacement, Jeff Hart, KF6EUM, was introduced. Jeff's e-mail address is jeffKF6EUM@aol.com. Joe Gregory, WA6DQN, announced prospective trail ride public service events for the year.

VP Stu Cannon, KE6OFD, announced the evening's program would

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be a talk on earthquakes by research seismologist Bob Urhammer, WB6VEX, from UC Berkeley.

Sam, KO6JR noted that the County EOC was activated 2/5 and RACES was on alert status if necessary to:

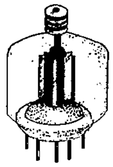
a) provide for EOC to Brentwood communications,
b) man the EOC for communications on an 18-hr basis, and
c) as in the week prior when it was necessary to obtain drivers for flood watches.

Under new business, Sam noted that there would be two large events during 1998 in which members would be asked to participate: the Police Games during the third week of June, and the Firefighter's Olympics during July 19-24.

Sam announced that John Schultz had agreed to manage the door prize ticket sales.

Sam adjourned the meeting at 8:41 p.m. for refreshments and the evening program.

Respectfully submitted,
Paul Dickey, N6JOX, Secretary



MDARC Board of Directors Minutes

Feb. 9, 1998

The meeting was called to order by President Sam Lipson, KO6JR, at 7:30 p.m. at the Bakers Square Restaurant. Other officers and directors present: Vice-President Stu Cannon, KE6OFD, Sect'y Paul Dickey, N6JOX, Treasurer Greg Estep, KE6VTA, Keith Lattin, N6PMF, Ed Ritchie, K6SFD, and John Stuart, KM6QX. Committee Chairmen present: RRRG—Jim Brunk, N6BHX, Social—George Roush, WB6OFH. Others present: Pacificon—Dick Brown, KT6X, RRRG—Howard Burk, KE6PTT, Pacificon—Jay Caldis, KT6Y, RRRG—Jim Tittle, KC6SOE, RRRG—Dick Schulze, AA6DL.

The December Board minutes were **approved** as amended. The January Board minutes were **approved** as amended with the words "capital projects" substituted for the word "major."

George, WB6OFH reported on plans for the summer picnic, scheduled for July 18 beginning at 10:00 a.m., and discussed the monthly meeting donut order.

Jim, N6BHX reported on signal survey reports and noted that more were needed. He led a discussion of RRRG plans for:

a) the 220 replacement project. Completion was estimated for 120 days after project approval. The Board **approved** $3000 for the project per the previously ap-

continued on page 8

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Power to the People! Part I

By JC Smith, K0HPS

OK, silly title. I was in college in the 60s so, hey, cut me a little slack. Actually this might be more correctly titled "POWER FOR THE HAMS" but that doesn't have the same historical ring to it. What I plan to produce here is a series of articles that touch on various aspects of providing power for our equipment by means other than plugging the Astron into PG&E.

This started out as a series of postings I made to the AMSAT bbs on the Internet. For those who can't wait for the subsequent articles (or want to skip the elementary theory and/or extraneous BS), you can get the basic idea by reading the compilation of those postings which I have posted in the Satellites SIG on the MDARC (FirstClass) bbs. Look for the 10/13/97 posting with the subject "Battery Charging, etc."

So, why not just plug the Astron into PG&E you might ask. Well, that works fine as long as PG&E is available and the Astron is working. However, as hams, we want to be able to operate in the event of emergencies when PG&E might well be off line, and the situation that initially prompted this discussion was a Yaesu power supply that frequently went south in mid-qso. Also, none of us enjoy having a QSO interrupted by one of the all-to-frequent short term power outages we seem to suffer in this area. Believe it or not, you can put together your own UPS (uninterruptible power supply) for less than the cost of a small Astron. (By the way, I'm not picking on Astron. They make a fine power supply. They just have a very recognizable name.)

The methods we'll be exploring all involve batteries, and I'm not talking about those little things you snap on your HT (although many of the same principles apply). We'll mainly be discussing lead-acid batteries. For most of us, these are the most practical and cost effective. There are various types of lead-acid batteries. The main types are wet cell (both "maintenance-free" and serviceable) and sealed gel cell. We'll be discussing sizing, connecting, charging and maintaining batteries as well as various ways to use the energy stored in them. We'll spend some time on solar chargers as well as more conventional means of keeping batteries topped off. Before we can discuss these things intelligently, we need to cover some basics and define a few terms. Let's get started and learn something about batteries.

Batteries store energy. They take electrical energy and convert it to chemical energy when they charge and do the reverse when they discharge. Lead-acid batteries get their name from the two major reactive components: the battery plates which are made of various materials containing lead, and the electrolyte, normally sulfuric acid. The charge/discharge process involves sulfates forming on the lead plates as the battery discharges, and then going back into solution as the battery charges. These electrochemical changes involve a flow of electrons which is the current we need to run our equipment. Batteries are DC (direct current) devices.

When we talk about batteries we usually use a few common electrical terms: Volts, Amps and Amp-hours. Volts, or electromotive force, represents the amount of "electrical pressure" available to push the electrons through the conductor. Think of it as water pressure pushing water through a tube, the higher the pressure the more water that can be pushed through a given size tube in a given amount of time. The stuff that's flowing is the current and if we are talking about electricity it's electrons that are flowing and we measure the rate of flow in Amperes or Amps. Amp-hours (sometimes abbreviated Ah or A-hr.) is a term we use to rate the capacity of a battery. A better term would be Coulombs. Going back to our water analogy, Coulombs would relate to gallons, a measure of capacity. An Ampere of electric current is equal to one Coulomb per second (which we could relate to gallons per minute as a measure of water flow). You probably also recall that one Ampere is the rate of current flow through a resistance of one Ohm when pushed by an electromotive force of one Volt. Ohms law, remember?

Just as it makes sense to rate the capacity of a water storage tank in gallons, it makes sense to rate an electron storage tank (a battery) in Coulombs... but we don't. We use Amp-hours. In our water analogy this would be gpm-minutes (gpm = gallons per minute). If you do the math you see that this works out to gallons. OK, so what is an Amp-hour anyway? Well, it's one Ampere of current flowing for one hour, or it's one half Ampere of current flowing for two hours, or it's ten Amps for six minutes, etc., etc. Get the picture? A certain rate of flow for a certain length of time equals a definitive quantity of the stuff that is flowing. That's pretty straight forward, but there is one catch. When the current is being created by an electro-chemical reaction in a battery, the amount produced is affected by the rate the reaction is occurring. For this reason, a battery's capacity in Amp-hours is usually specified at a particular rate of discharge. For batteries of the type we are considering this is normally specified at a 20 hour rate, which is a rate that would discharge the battery 80% in a period of 20 hours. This 80% discharge is considered to occur when the battery reaches 1.75 Volts per cell (10.5 Volts for a 12 Volt battery which has 6 cells) while under the 20 hour rate load. It is NOT a good idea, incidentally, to draw a battery this far down. More on this later.

We need to know something about battery capacity, current, etc. in order to be able to size the components of our system. Of course, the other thing we need is our load factors. How much energy are we going to consume? What's the duty cycle? For how long before we recharge the batteries? What voltages do we need? Is it all DC, or do we need some AC too? We'll cover all this in due time.

First, let's look at some batteries. A typical battery used in this manner (although not the best choice) is a maintenance-free 12 Volt marine/RV deep cycle battery. The two most common sizes are group 24 and group 27. They are about the size of a car battery (24 is the size you might see in a small car, 27 in a large car or a full size pickup truck). These are 12 Volt batteries. They are made up of six cells, 2 Volts (nominal) per cell. Most of these batteries are the "maintenance-free" design. You find them at places like Costco or Wallmart. One type I have used is the Delco Voyager. In a group 27 size these are ~100 Amp-hr. capacity and they cost about $50. Let's look at that 100 Amp-hr. capacity for a minute. What's the 20 hour rate for this battery? Easy, 100 Amp-hr. divided by 20 hr. equals 5 Amps. This battery would put out a constant 5 Amps for 20 hours before reaching a voltage of 10.5 Volts (1.75 Volts per cell). At a higher rate of discharge the capacity would be less. For example, at a 10 Amp rate, the useful time (time to drop to 1.75 Volts per cell) would be about 8 hours rather than the 10 hours you might expect if the relationship were linear. At a lower rate the time would be correspondingly higher. Remember, when we operate our equipment we are listening much more than we are talking (well... most of us are) so for most of our operating time our power consumption is far below the maximum printed in the specs. which is typically 20 Amps at 12 Volts for a 100 Watt transmitter. Reducing power to 50 Watts (which most ops on the other end of the QSO won't even notice) will more than double your operating time.

An advantage of this type of battery is that it requires no servicing and can be used indoors with little worry of spills. Mine sit on a shelf under a desk in my shack. It might be a good precaution to set them in a plastic tray of some sort, but I've never seen one leak. If you install them in a closed box it should be vented. Another advantage is the 12 Volt format. Ideal for a single battery system for use with most of our equipment. However, the "sealed" case of this battery is also a major disadvantage. There is no way to top off the electrolyte. To compensate for this these maintenance-free batteries are usually manufactured with excess electrolyte, but when it's gone that's it. You can't just add more distilled water like you do in your car battery. Also, you should not equalize this type of battery, and that too will reduce battery life. More on this later. One other precaution: even though you cannot remove the caps on these batteries you should not assume that they are truly sealed. They cannot be operated in any position other than upright, and in fact may spill acid if turned on their side.

Similar batteries are available with removable caps. They look like (but are NOT) automobile batteries. These can be serviced, but precautions must be taken when you do as drips, splatters and minor spills are common. How about car batteries? No! They are different internally. They are designed for very short, high amperage discharges. Deep cycling will ruin them in short order.

Another wet cell battery that is very good for this application is the golf cart or fork lift type battery. These are typically 6 Volt batteries, but some 12 Volt models are available. One of the best values in this type is the Trojan T-105 or T-125. These are both 6 Volt batteries commonly found in golf carts, fork lifts and RVs. They have 20 hour A-hr. ratings of 225 and 235 respectively and cost about $60 - $70 with the T-105 being the better value. They are available in a couple of different terminal styles. These batteries are not sealed, and are designed to be serviced. They should be installed in a ventilated area and/or in some sort of vented battery box. They are a large battery (LxWxH = 10.4 x 7.2 x 11.2 inches, weight 63#) and you need two of them for a 12 Volt system. They will substantially outlast the smaller marine type batteries mentioned above if they are maintained properly. You can install them indoors if they are in a battery box with an outdoor vent. I built one of these vented boxes so I could install four of these batteries under the sofa in my RV. If you have a typical "drafty" garage you can probably install them there without any external venting.

Ideally, any box used to hold wet cell lead-acid batteries should be able to contain all the electrolyte from one battery in the event of a case rupture. It's also a good idea to cover the bottom of the box with sodium bicarbonate (baking soda) before installing the batteries. The discharge vent should be at the high point of the box and intake vents should be near the bottom, but not so close to the bottom that the box won't hold the above mentioned spill. The gases that are being vented include hydrogen sulfide (which is corrosive to electronic equipment and just about everything else), hydrogen and oxygen, and yes, there is a way to recombine the hydrogen and oxygen to reduce the frequency of servicing. Devices called Hydro Caps can be installed in place of the regular caps. They are expensive and do not completely eliminate servicing. They are normally used when servicing is difficult and/or expensive such as at remote sites. One other function of a battery box is to protect the battery terminals. You wouldn't believe the excitement generated by a large metal object accidentally creating a direct short across a large battery bank. Batteries, even the little ones, can be dangerous. We'll discuss battery safety further when we cover connecting and maintaining systems.

A more expensive alternative is the gelled electrolyte or Gel Cell battery. These are sealed and suitable for use indoors with no ventilation. They can even be installed in the same cabinet as electronics. Good quality Gel Cells should outlast the inexpensive marine/RV types you find at Costco and Walmart. A typical battery of this type is the Dynasty battery from Johnson Controls. The GC12V100B is a 12 Volt, 90 A-hr. rated battery. LxWxH is 13.1 x 6.9 x 9.5 inches, weight 68#, price about $125. These won't spill and most can be used in any orientation, where the wet cell types must sit upright.

Smaller gel cell batteries are often available at swapmeets and from other surplus sources. Sizes range from the QRP 12 V, 0.7 A-hr. (3.8 x 1.0 x 2.5, 0.8#) on up. For QRP, walkie-talkie and similar applications the burglar alarm size batteries which typically range from 2.4 to 6 A-hr. are good and often available for under $5. These are sometimes used, but usually have much life remaining. Others are "new" but out of date, but at these prices still a bargain. Fresh, new ones of this size would be around $20 - $25. My experience with these batteries is that 90% of them will provide good service. A good way to test them is to bring a voltmeter and a small 12 Volt bulb on pigtails with alligator clips. Check the voltages with the bulb attached. The batteries holding the higher voltages will generally be the best ones.

There are many other types of batteries. These are just a few of the most common ones used by hams. The considerations are similar for all of them, and for most hobbyists price is a big one. I haven't mentioned Nickel Cadmium or other "high-tech" batteries for a very good reason... a 12 Volt, 100 A-hr. Ni-Cad would set you back over $1200. For large systems, individual 2 Volt gelled electrolyte cells are often used in series to achieve the desired voltage. These individual cells are available up to 2680 A-hr. and probably even larger. A 12 Volt battery made from cells like this would weigh a ton and cost around $6,000. These cells have a much longer life than what we normally think of as gel-cell batteries. Some are available with twenty year (pro-rated) warranties. Ni-cads are available with even longer warranties. A 12 Volt, 2246 A-hr. ni-cad battery bank would weigh 2260 lb. and cost around $23,000. No wonder we don't see them powering too many ham shacks.

Actually, you don't need this much capacity for the typical shack. How much you do need depends on your individual situation. Next month we'll cover how to calculate the battery size you need, and how best to keep them charged. You may be surprised at how low cost it can be to set up your own UPS (uninterruptible power supply).

MDARC Board Minutes

continued from page 5

proved budget.
- b) timeline requirements on RRRG projects.
- c) repeater usage.

Dick, KT6X discussed the bulletin board criteria for Design Link. They may drop TCP/IP because of funding. Users would be required to dial up the BB. Use now costs $38/year.

John, KM6QX discussed the dues notice format and needed changes.

Greg, KE6VTA noted the need for a MDARC table at Pacificon. He then discussed the Treasurer's report.

Sam, KO6JR noted that the County EOC was activated 2/5 and placed RACES on an alert status if necessary to:
- a) provide for EOC to Brentwood communications,
- b) man the EOC for communications on an 18-hr basis, and
- c) as in the week prior when it was necessary to obtain drivers for flood watches.

Under new business, the Board renewed its opposition to publishing autoslot numbers.

Sam adjourned the meeting at 9:11 p.m. The next Board meeting will be Mar. 9, at a location to be determined *[Emil Villa's, Concord—Ed.]*.

Respectfully submitted,
Paul Dickey, N6JOX, Secretary

Public Service Events 1998

1. 04-18-98 International Arabian Horse Association (IAHA) Competitive Trailride, Sunol Regional Wilderness. Lunch provided, bring your own drinking water. 8 operators needed. Coordinator Joe Gregory, WA6DQN Phone 930-6889
2. 05-02-98 Mt Diablo Trailride Association Spring Trailride. On Mt Diablo from CMDTRA clubhouse off Russellman Rd east of Clayton. 8-10 operators needed with mobile transceivers (or HT's with amplifiers) to install in 4WD vehicles for travel over mountain trails. Breakfast and lunch provided; bring your own water or soft drinks. Coordinator Joe Gregory, WA6DQN Phone 930-6889
3. 05-09-98 Skip to Skips Mountain Challenge. A mountain bike and foot race from Skipolini's Pizza in Antioch to Skipolini's Pizza in Clayton, part of which runs through the Black Diamond Mines park. We need 6 operators. We will be using the MDARC 2 meter repeater for this event. Each operator will need to provide a photo copy of his/her drivers license and proof of insurance before being able to enter the park. One or two vehicles capable of being driven on unimproved roads would be helpful. Coordinator Jim Greenwood, KQ6LF, Phone 779-0166.
4. 05-30-98 Diablo Vista Endurance Trailride on Mt Diablo from north end of Finley Rd in Tassajara. 8 operators with HT's or mobile transceivers and gain antennas. Operate from your own car on public roads and in State Park. Lunch provided, bring your own water. Coordinator Joe Gregory, WA6DQN Phone 930-6889
5. 06-06-98 IAHA Competitive ride, Black Diamond Mines Regional Park, South Antioch. Lunches provided. Bring your own water or soft drinks. 8 operators needed. . Coordinator Joe Gregory, WA6DQN Phone 930-6889
6. 06-13-98 Moraga Horsemen's Association Endurance Ride, Oakland Hills base in Bort Meadows. Check points on public roads. Operate from your car. 7 operators needed. Coordinator Joe Gregory, WA6DQN Phone 930-6889
7. 09-19-98 Las Trampas Endurance Ride. Oakland Hills, Redwood and Anthony Chabot Parks. Lunches provided. Bring your drinking water or cold sodas. 8 operators needed. Coordinator Joe Gregory, WA6DQN Phone 930-6889

Diablo Antenna Systems Threatened

By Harry Styron, K6MFV
ARRL Volunteer Counsel

Contra Costa County has released a 2nd draft of its proposed policy, for discussion. In brief, it segregates cell sites and high level tower facilities. It has dealt with the issue of amateur radio by simply appending the word "commercial" to all of its references, thereby implicitly omitting coverage of amateur antennas.

This has two consequences: (1) the policy could be specifically supportive of amateur radio, and therefore of help when dealing with cities; this may be too much to expect. (2) the big issue is the status of antennas on Mt. Diablo. The Save Mt. Diablo group wants all antennas out of the park, and so the policy restricts antennas near to or higher than any peak. The policy will apply when existing permits come up for renewal (every ten years). Thus, in its present form, it has some long term implications for W6CX, and for other private machines on North and South peak.

You may wish to write a letter to the Board of Supervisors describing your use of the repeaters, voice and otherwise, particularly for communication between here and the Sacramento-San Joaquin Valley, and your opposition to any policy which would at any time require the removal of antennas which can "see over" the top of the Mountain. The address is in the phonebook in the government pages at the front. If you wish to address your specific supervisor on the issue, that would be good, too.

It was a Hot, Dusty Day

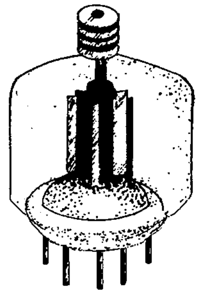
continued from page 2

Muir Road in Martinez on the third Wednesday of each month at 7:30PM.

We encourage you to talk to any Team member for details, or you may contact either Clay Yale, N6YBQ, the ARC Team's Reserve Lieutenant, at cwyale@mcn.org or 707/785-2404; or Mike Patterson, KE6JGA, at mpat@ricochet.net or 510/842-5019.

Stolen Rigs

Two Kenwood TR-7950 (S/N 4120851 on one radio) and two Kenwood mikes with DTMF pad on back. Up and Down switches on the upper corners of the mike. 2 Meter FM, 50W, transceiver. Channel 1 set to 7.885 and Channel 4 set to 7.825 on one rig.
Removed from unlocked car in El Cerrito CA (north of Oakland) between 11pm-6:30am on February 27, 1998.
$50 reward per radio for return of radio to Fred Finster, WB7ODY
(408) 588-5726
e-mail: Fred_Finster@el.nec.com



NETS

W6CX Nets

APRS Net	Tuesdays 1930 Hours 147.060/+ (100 pl) Net Control: Barry, KC6WYA
Phone Net	Thursdays 1930 Hours 147.060/+ (100 pl) Net Control: Jay Caldis, KT6Y
ATV Net	Thursdays 2000 Hours Net Control: Mike Burke, KB6RMT Alternate: Sylvia, KC6YJV
Youth Net	Thursdays 1900 Hours 147.060/+ (100 pl) Net Control: Jeff Burke, KE6YAW

Contra Costa County Emergency Services HF Net

First Thursday following first Wednesday, 2000 Hours, 3.895 MHz. Net Control: Richard Shappee, WA5HQJ

Sheriff's Amateur Radio Communications Team

Clay Yale, N6YBQ
(510) 228-8223

Contra Costa County ARES/RACES Nets

Thursdays, 1900 Hours

Central County	145.680 Simplex Jim Brunk*, N6BHX (510) 372-8248
East County	146.535 Simplex Jim Tittle*, KC6SOE (510) 432-3220
South County	146.355/+ (100 pl) Ed Ritchie*, K6SFD (510) 837-3265
West County	145.110/- Rich Parker*, KD6JCT (510) 237-2777

QSY to 147.735/- at 1920 Hours
Meeting of all County ARES/RACES Nets
Sam Lipson, District Emergency Coordinator, KO6JR
(510) 229-5705

* Assistant District Emergency Coordinator

W6CX Signal Strength Report Form

The Rocky Ridge Repeater Committee is trying to determine how our new antenna location has affected coverage. We would appreciate it if as many members as possible would fill out and return the attached form. If you operate from multiple locations, with multiple radios or antennas or on multiple MDARC repeaters, please copy the form and submit one for each location, radio, antenna and repeater. Please fill it out as completely as possible, but if there is some information you do not know don't let that stop you from sending it in. The more replies we can get the better we will be able to evaluate our coverage and make plans for improving it.

Please send your replies to Jim Brunk, N6BHX. Mailing address: 514 Palms Drive, Martinez, CA 94553. E-mail: brunk@ix.netcom.com or via the DesignLink BBS. This form is also available on the MDARC Web Page and on the DesignLink BBS.

If you are using a "beam" antenna, be sure it's pointed at the top of Mt. Diablo.

Which repeater? 147.060 224.780 441.325

Your location (city and cross streets please):

Height of your antenna above ground:

Type of antenna:

Gain claimed by antenna mfr.:

Length and type of coax (if any):
Type of receiver:

Received signal strength:

Are you using a preamp? If yes, how many dB gain?

Comments? (Please include any pertinent information such as if there is a big hill directly between you and the top of the mountain.)

CALENDAR OF EVENTS

March 9	7:30 pm	MDARC Board Meeting	Emil Villas, Concord
March 20	**7:00 pm**	MDARC Auction	Our Savior's Lutheran Church 1035 Carol Lane, Lafayette
March 28		April *Carrier* Deadline	
April 5	7:00 am-Noon	Livermore Swapmeet	Las Positas College, Livermore 1st Sunday every month
April 5	1:00 pm	Sunnyvale VEC Exams Gene Capener, WW6H, 510-254-5090	Consolidated Fire Training Center 2945 Treat Blvd., Concord 1st Sunday even months

The Carrier
Newsletter of the Mt. Diablo Amateur Radio Club
P.O. Box 23222
Pleasant Hill, CA 94523

BULK RATE
U. S. POSTAGE
PAID
CONCORD, CA
PERMIT NO. 460

Change In Service Requested

[redacted]

MDARC Auction March 20

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